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ABSTRACT

The acquisition and the application of mental skills in sports and non-sport settings are discussed in this paper. The paper opens with an overview of the situation in Sweden; it is noted that 25% of the Swedish population have used mental training programs and that in the future all Swedes will have experienced such programs, since basic mental training has become part of the curriculum. The research background that led to the development of systematic mental training is discussed, focusing on the investigation of a state of awareness and consciousness appropriate for optimal change and growth and on identification of the right content for mental training. Four areas of mental skills for peak performance are identified: self-image (self-confidence, self-evaluation, and self-esteem); goal-images (knowing where to go and commitment to the goal); attitude (reality-testing and reality-interpretation); and control (to identify, produce, and control mental skills such as relaxation). Examples of sports skills and life skills training are complemented by findings from evaluations. It is concluded that, in a time where the benefits of sport are questioned by an increasing number of people, it should be important to point to the role of sport and mental training as a device for personal growth or as a model for life. Twelve references, and 14 figures illustrating the text are included. (ABL)

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MENTAL SKILLS for Sport and Life

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MENTAL SKILLS FOR SPORTS AND LIFE

Lars-Eric Uneståhl, Örebro University, Sweden

The paper will cover the acquisition as well as the application of mental skills in sports and non-sport settings. The paper starts with an overview of the current situation in Sweden, followed by some of the research findings that led to the development of systematic mental training. Examples of sports skills and life skills training are complemented by findings from evaluations and the paper will end with some proposals for the future.

Current situation in Sweden

1. 65% of the top athletes use forms of mental training and mental preparation (1988). A similar investigation 1980 showed 30%. Large variations exist between various national teams. Individual sports use more mental training than team sports. The *Swedish model* is characterized best in sports like tennis, table tennis, golf etc.
2. Mental Training programs have so far been used by over two million Swedes, which translates to 25% of the population. This figure covers various frequencies in usage from single sessions to many years of regular training.
3. All school children are supposed to receive basic mental training. Sweden was the first country (and is still the only one), who has included basic mental training into the curriculum, statewide. For the future this will mean that every Swede will have experience of mental training.
3. Mental training programs (muscular relaxation, self-hypnosis, self-image training, motivation, sleep) can be acquired by everyone from every pharmacy in Sweden.
4. The most common areas, where people come in contact with mental training programs are: Schools, Sport, Military, Personal growth, Personal development, Management training, Health care, Behavior change (smoking, weight, sleep), Psychosomatic problems.
5. Sweden was the first country that founded a National Society for Mental Training (Feb. 1989). It consists of a main body and six special sections: Sport, Business and Public administration, Education, Health care, Art and Stage performance, Research.

Research background

The systematic training of mental skills in sports and life are based on two areas of research:
I. Investigation of a state of awareness and consciousness, appropriate for optimal change and growth.
II. Identification of the right content of mental training. What skills are important for Peak-performance and Wellness in Sport and Life?
Following is a short summary of some research findings from the sixties. The research is described in 46 research reports from Uppsala University and summarized in the book: Hypnosis and Posthypnotic suggestions (Uneståhl, 1973)
1. Regular, systematic and long-term self-hypnotic training was superior to hetero-hypnosis in a variety of measured dimensions.
2. Audio taped hypnotic inductions were as effective as inductions given by a present hypnotizer, measured on a standardized scale of hypnotic susceptibility (the Stanford scales)
3. Long-term imagery training gave a significant increase in imagery skills, measured by standardized scales for imagery vividness and control.
4. Long-term training in relaxation and imagery gave a significant increase in hypnotic skills, measured by the Stanford scales of hypnotic susceptibility.
5. Hypnotic alterations of bioelectric, cardiovascular, respiratory, vasomotor, gastrointestinal, endocrine and metabolic functions were larger and more precise in comparison with non-hypnotic alterations, where the same techniques were used.

6. Hypnosis and self-hypnosis was often described as a state of increased concentration on a limited number of selected stimuli accompanied by a dissociation of non-relevant stimuli.
7. Relaxation is a common and sometimes the basic element in hypnotic induction procedures. It is also a common feature of the hypnotic experience. In spite of this, however, relaxation is neither a necessary element in induction procedures nor is it a necessary dimension of the hypnotic state.
8. Hypnotic susceptibility scores had a significant positive correlation with ideo-motor skills, but a zero-correlation with secondary suggestibility (gullibility).
9. A statement, common in textbooks, that the effects of posthypnotic suggestions (PHS) could last for life, turned out to be a confusion between two things. PHS had normally a short duration (minutes or hours), but the *signal-value* (a triggers capacity to release a certain effect) could last for years or throughout a lifetime.
10. Any simple or complex stimulus, for instance a word, movement, behavior and situation but also a thought or even a hallucination can receive signal-value during hypnosis or self-hypnosis, after which it will serve as a *trigger,* releasing posthypnotic effects.
11. A trigger, signal-value or conditioning, can be established in just one single hypnotic or self-hypnotic session.
12. Recognition thresholds for words were significantly lowered, when the words had received signal-value.
13. When a stimulus had become a trigger, it worked even in those situations, where the subject was unaware about the presence of the trigger. Such a trigger could not be changed by voluntary effort.
14. A positive emotion like the ideal performing feeling could be separated (borrowed) from a previous event and then conditioned to a future event (for instance a future competition)
15. Positive emotions, released by a pre-decided behavior, were effective reinforcers of this behavior.

II. Mental Skills for Peak Performance

Terms like success and progress are more easily defined in sports, compared with life in general. Thus, sports were the first area of investigation in order to find the relevant dimensions behind good performance. The national teams in shooting, track and field, swimming, judo, skiing, handball and soccer were investigated and compared with athletes and players of a lower caliber. (Uneståhl 1973 - 1980) The 4 factors showing significant differences were:
1. Self-image (self-confidence, self-evaluation, self-esteem)
2. Goal-images (knowing where to go and to feel committed to the goal(s).
3. Attitude (Reality-testing and reality— interpretation)
4. Control (To identify, produce and control mental skills like relaxation, feelings etc.)

IPF - the Ideal Performing Feeling

Each one of the four factors were examined in order to find the optimal contribution to IPS. The athletes' descriptions of the ideal feeling had for instance remarkable similarities with a hypnotic state.
Figure 1 in here.

Mental Skills for Wellness

Similar studies during the eighties of people with various length of yearly absence from work due to illness and patients (for instance cancer patients) with different lengths of illness showed that the same four areas were important for Wellness and for IHS - the ideal healing state (Uneståhl 1980-89). In the same way as in the investigations about IPS, the four dimensions have been isolated and analyzed in order to find each factor's contribution to the total effect.

Mental skills training

Based on these studies of peak-performance the Inner Mental Training (IMT)—programs were developed, evaluated and modified during the seventies. Field studies and laboratory experiments were done of the whole training system as well as of single parts of the training. When exploratory studies pointed to similarities between IPS, ILS (Ideal Learning State) and IHS, the IMT-programs began to be used in schools, business and in clinical settings in the same way as they had been used in sports.

The training programs were always self-instructional and did not require expertise in order to be used. They were "experiential " in nature and based on a combination of learning common principles and individual applications due to the needs of the individual and the demands of the situation.

Definitions
Inner Mental Training (IMT) is defined as a systematic, long-term and developmental training of mental skills and attitudes aiming to Peak-performance and Wellness.
Inner Mental Preparation (IMP) is defined as pre-trained mental skills and procedures, which are intended to become effective at certain pre-decided occasions.

Phases
IMT is divided into three phases, which are trained in the following order:
A. MENTAL CONDITIONING
Learning muscular and mental relaxation and a special *state of mind*, an *alternative state of consciousness* (ASC) which gives the base for control and positive change.
B. MENTAL TECHNIQUE TRAINING
Learning alternative systems of self-control and self-directing techniques like suggestions, autogenic formula or imagery techniques, all of which are more effective if combined with ASC.
C. MENTAL STRENGTH TRAINING
The mental skills in A and B are combined and applied to areas like motivation, emotional reactions and mood states, attitudes, concentration etc.

The Philosophy of Mental Skill Training
1. The principles of Peak performance and Wellness can be explored, controlled and developed.
2. Mental skills should be looked at and treated in the same way as physical skills.
3. Human growth and development is directed by trainable factors in the human mind.
4. The sports related growth model (SGM) starts with visions, missions and performance goals.
5. SGM neglects the history, accepts and enjoys the present and is oriented to and energized by the future
6. SGM sees human beings more as a cause to the future than as a result of the past
7. IPS, IHS and the ideal reality state (IRS) are most easily reached, maintained and developed through an hypnotic-like state, where the reality-testing is weakened

From Shrink and negative Sport to Stretch and Positive Sport
The traditional applied Sport Psychologist is often looked upon as a *shrink*, the expert in problem shrinking. This is well in accord with the old role of a coach, that of a fault seeker and problem solver. So far, the main reason in many countries for asking a Sport Psychologist to work with athletes or teams have been for fault seeking and problem corrections. This is in agreement with the common models in society where problem solving approaches are much more common then preventive or growth models.

There are numerous studies, articles and books written about negative feelings as with anxiety, aggression and depression. In comparison astonishingly little is written about positive feelings. Scientists have almost been ashamed to look into areas like happiness, joy and exhilaration. The same is true for news media. The constant selection of negative news may bring about dangerous illusions of reality together with paralysing feelings of helplessness.

Unfortunately, this has been true about Sport Psychology as well. Compare, for instance, the number of studies about anxiety in Sport with those about peak-experiences. The future Sport Psychologist, however, (like the future coach) will hopefully be looked upon as a *stretch*, an expert in expanding human capacities and capabilities. This human potential approach is in full agreement with the main purpose of mental training. Mental Training is **not** primarily a clinical method designed for athletes/persons with problems. Mental training is offered as a general method for everyone who wants to improve and grow as an athlete or as a human being. This educational approach, however, will also have important contributions to clinical settings in order to prevent problem-fixation and institutionalization. This also brings sports, sports psychology and mental training into the frontline for a change towards a more positive society with emphasis on opportunities and possibilities instead of barriers, problems and obstacles.

The Use of Alternative states of Consciousness (ASC-1) in learning mental skills.
Mental relaxation or self-hypnosis is an essential and important part of the basic mental training. Alternative systems of control (ASC-2) as well as Alternative systems of Change (ASC-3) and growth are both dependent on self-hypnosis in order to become effective. Thus, basic mental training is a necessary base before learning mental skills like concentration, mental toughness, motivation etc.
Figure 3 in here

Learning self-hypnosis
Figure 4 in here
Different ways of learning self-hypnosis can be distributed along two axes, degree of outside guidance and degree of obtained self-control.

Mental skills training in various groups
EARLY LIFE-SKILLS TRAINING
The research project *Relaxation in Swedish Schools* led 1980, after 6 years of research, to the inclusion of basic mental training in the Swedish school curriculum. During the eighties a mental training program, called *the seven C:s,* has been evaluated on various age-groups. The seven C:s contains seven child-like capacities: Confidence, Concentration, Control, Calmness, Commitment, Creativity and Cheerfulness.

During 1988 a program for a complete life-skills training in schools was worked out and is now under evaluation. It starts during the first year of elementary schools and finish during the last year of high school. The contents are as follows:
Year 1. Basic Mental Training (Muscular and Mental Relaxation, Triggers)
Year 2-3. Mental Training (The seven C:s)
Year 4-6. Training of basic Health habits (Australian Health Development Foundation)
Year 7-8. Communication skills, Relation training, Teamwork.
Year 9-11. Decision making training (Leon Mann, Australia)
Year 12. Leadership— and Parentship-training

MILITARY
Construction and evaluation of a mental preparation training program applied to the Swedish male population during the military service started during 1988. The purpose is to continue and develope the earlier school training.

BUSINESS
A large number of Swedish companies (Volvo, SAS, SKF, IKEA, Unilever, Telecomp., etc.) have gone through a mental training program specially designed to their specific needs. Typically, the program started with the individual development (relaxed efficiency and increased work/life satisfaction) as a base for better team spirit and followed by organizational growth. The training, which aims for lasting and long-term effects, was intended for everyone in the company. In order to reach everyone on all levels a large number of supervisors or mental trainers were educated.

UNIVERSITY
In many countries and in many disciplines there exist unfortunate gaps between science and application. Universities are often critisized for their isolation from relevant questions and needs in society. Discussions about education are often more directed to administrative issues than to overall goals.

Swedish Universities statues state personal development as the overall goal for all university education. They also state that the two major avenues towards this goal are knowledge and skills. So far, however, very little of skill-development has been included in the courses.

This was one of the reasons a 2-year part-time university course, called: Personal development through mental training was started at Örebro University in the fall of 1987. Today more than 1500 students are taking this course, which are provided to people all over Sweden with the help of modern technology (video, data etc.)

This home university idea is based on certain educational principles, related to mental training. Examples are the following:

1. The law of state bound learning

The law says that the learning process is connected and often conditioned to the external environment, to the internal mood state and to the characteristics of the learning situation.

2. The Zeigarnik effect

It says that as all learning is goal-related, the type of goals (learning for exam or for life) will decide the long-term recall as well as the integration and application of the knowledge.

Both of these laws, of course, speak for a home— or work-university concept, especially in mental skills learning.

This distant learning course consists of 4 parts:

1. Literature selected from several disciplines
2. Videos with lessons, interviews, demonstrations
3. Training programs for 5 days a week training
4. Continuous measurements of personal growth as an individual feedback

The following training programs for learning mental skills are practised during the course:

1. Muscular relaxation I - II
2. Mental relaxation
3. Self-hypnosis
4. Imagery skill training
5. Visualization
6. Mental rehearsal
7. Affirmations
8. Self-image training
9. Goal-settings
10. Goal-integration
11. Concentration training
12. Mental toughness
13. Desensitization
14. Problem solving
15. Creativity training
16. Ideomotor training
17. Mind-Body training
18. Behavior change
19. Habit formation
20. Attitude training
21. Communication skills
22. Team training
23. Humor training
24. Inner joy
25. Life quality

EVALUATIONS

A large number of evaluations have been carried out. Some of them have investigated short-term effects of single parts of the training program like relaxation or concentration skills, while other have measured long-term effects of a long-term training. Here are one example of each.

Figure 5 and 6 in here

Hypnosis as an experimental tool

Hypnotic or posthypnotic techniques can me used to induce and control subjective states, which then will serve as independent variables in order to see the effects on performance. Here are two exwmples of such experiments.

Figure 7 and 8 in here

Mental skills training in special target groups

Here are five typical studies from different areas.

1. Psychological and physiological effects of basic mental training in schools - Setterlind, Uneståhl, 1983, doct.diss., Gothenburg University, 1983 (Setterlind)
2. Test of a sleeping-line system - Ljungdahl, Uneståhl, 1987, Sw.Med.J., 1989
3. a. The use of Mental Training among cancer patients - Stenstam, Uneståhl, Örebro and Uppsala University, Dept. of Psychol., 1988

3b. Immunological changes due to posthypnotic suggestions (Bäck, Uneståhl, in progr.)

4. The use of systematic humor training in chronic pain patients - Ljungdahl, Uneståhl, Örebro University, 1988, JAMA, 1989.
5. Effects of systematic and long-term training of mental skills - Uneståhl, Örebro University, 1989

1. Experiment group - n =294 and control group n =287. Age 12 to 18. The E-group was training for six weeks, 3 times a week, 5-10 minutes each time. The control group had physical activity.
More than 80% found it easy to relax, only 3% had difficulties. 90% felt confident, calm, relaxed and happy immediately after the sessions. The greatest changes in a positive direction could be found among girls, upper grades and among highly anxious pupils. Some significant long-term changes mentioned are: Managing school work better, increased learning capability, better sleep and decrease of certain psychosomatic problems such as headaches.

2. A 25-minute mental training program for sleep-onset was made and connected with an open line system from the hospital in Motala. Everyone could phone after 6pm and fall asleep with the program. After half an hour the connection was automatically cut, which means that people could continue to sleep with the receiver on the pillow. Within three months there was a significant reduction in pharmacy prescription of sleeping drugs as compared to a control area in southern Sweden.

3. a. All new cancer patients at Eskilstuna hospital during one year was randomized into experiment- and control-group. Due to ethical reasons the control group could not be denied the mental training, but they had to wait 3 months before they could start. Measurements showed significant differences in various life quality dimensions. Due to the experimental design a significant increase of survival rate could only be shown among the terminal patients.

3b. In connection with the design of a mental training program for Aids-patients some preliminary measurements of immunological dimensions have been made in relation to posthypnotic inductions of subjective states.

Figure 9 in here

4. N = 6. Chronic pain patients. Criteria for selection: Had not improved through medical treatment for a control period of minimum 5 years.
Meetings in a humor room once a week for 13 weeks. Forbidden to talk about problems and symptoms. The group was not entertained, had to be active. Homework, for instance training once a day with a special mental training program for laughing, humorous attitude and joy. A significant increase in life quality, a reduction of symptoms, which correlated significant with the increase of points on two humor tests. A control-group, who received problem-based psychotherapy showed no improvement.

Figure 10 in here

5. N = 1000. Measurements before and after 1-2 years of systematic training of mental skills. 50 training areas. Minimum training time per program = 1 week. Here are some results:

Figure 11A, 11B and 11 C in here

Some implications for the future

In a time where the benefits of sport is questioned by an increasing number of people it should be important to point to the role of sport and Mental Training (MT) as a device for personal growth or as a model for life. Here are some reasons why sport and MT ought to be a model for society.

1. Athletes, especially in individual sport, is like MT directed by a developmental model.
2. Thus, sport and MT emphasizes growth related inventions while society is mostly based on problem based interventions.
3. Society reads trends and makes history-based guesses about the future while sport and MT emphasizes creative solutions without historic bases.
4. The term "Future now" implies that future and present self-images can and must co-exist in a parallell and change-driving way.
5. As growth, progress and success is more easy defined in Sport it also serve as a model area for Life, where goals also need to be specific and measurable,
6. The SGM (sport related growth model) is complemented with a training model, where everyone can train those physical and mental skills, which are important for Peak- Performance and Wellness.
7. The search for alternative systems of self-control ought to be guided by the principle that the term "impossible" could not possibly be used about the future.

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FIGURE 1. COMMON DIMENSIONS IN ASC AND IPS (Unestâhl, 1979)

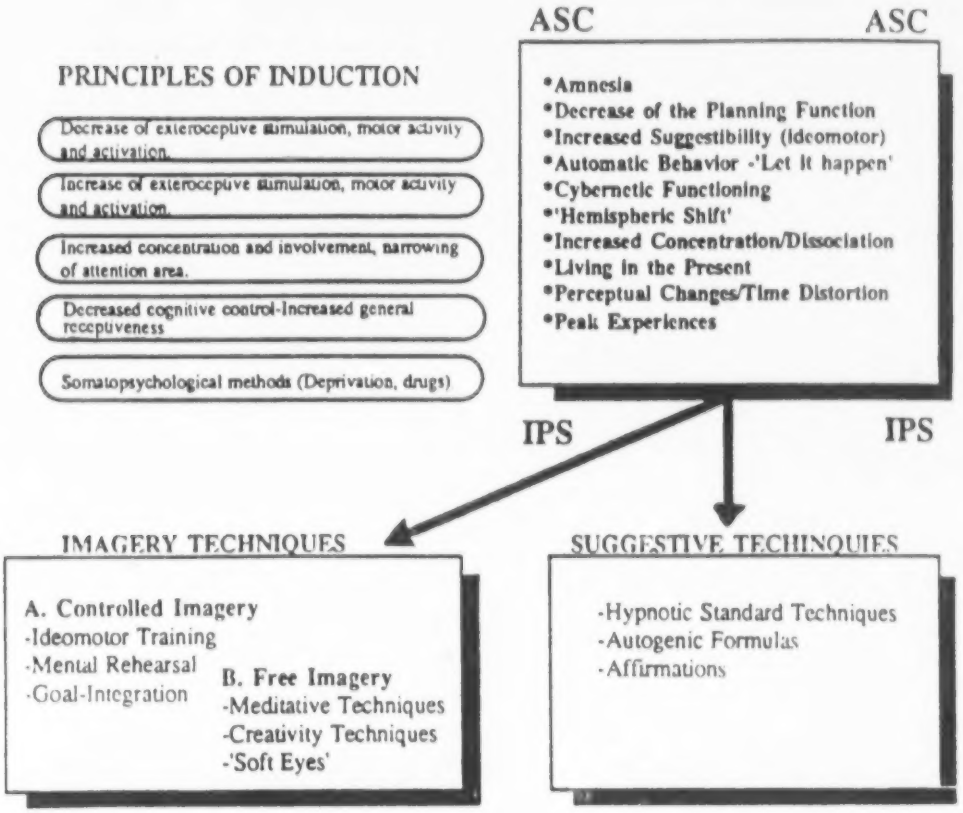


FIGURE 2. ASC IN GROWTH AND PROBLEMSOLVING (Unestâhl, 1986)

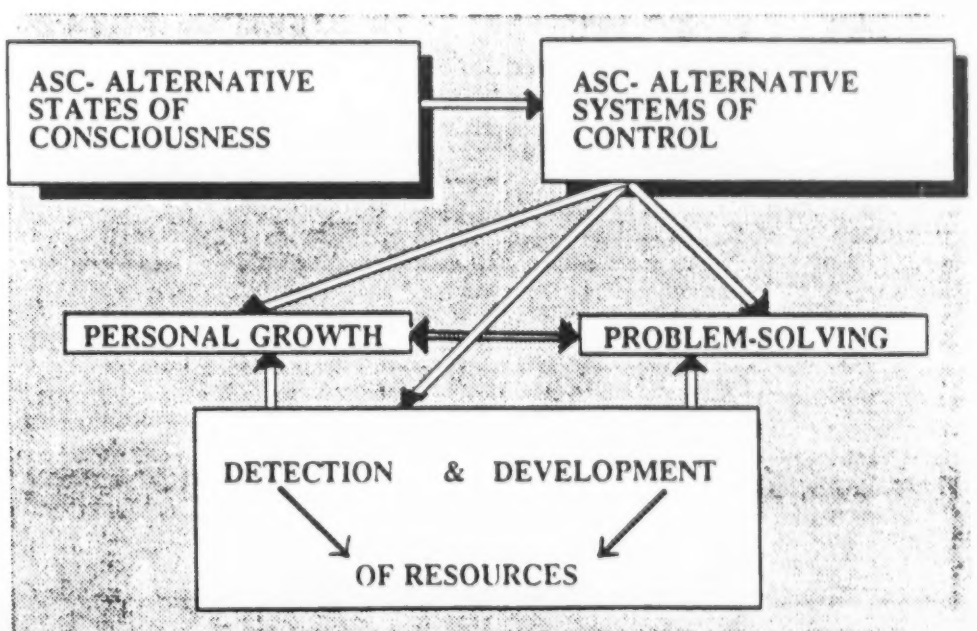


FIGURE 3. PRINCIPLES OF IDEAL STATES

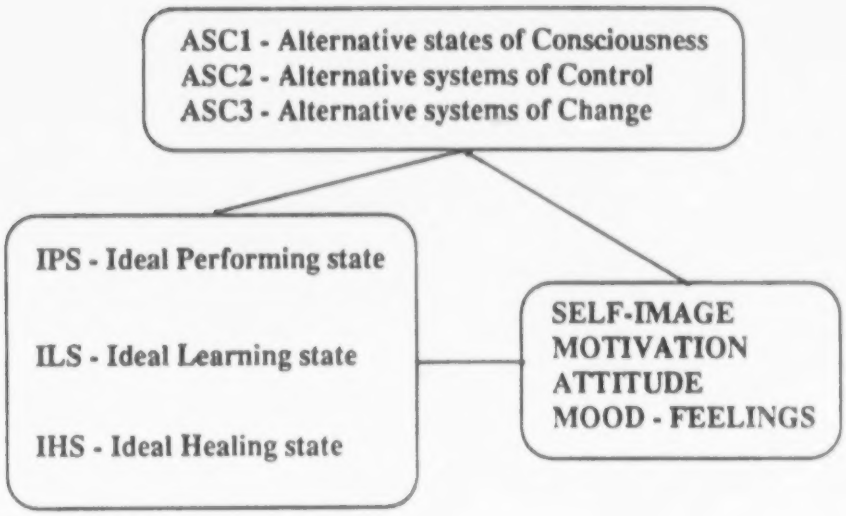


FIGURE 4. DIMENSIONS IN LEARNING SELF-HYPNOSIS

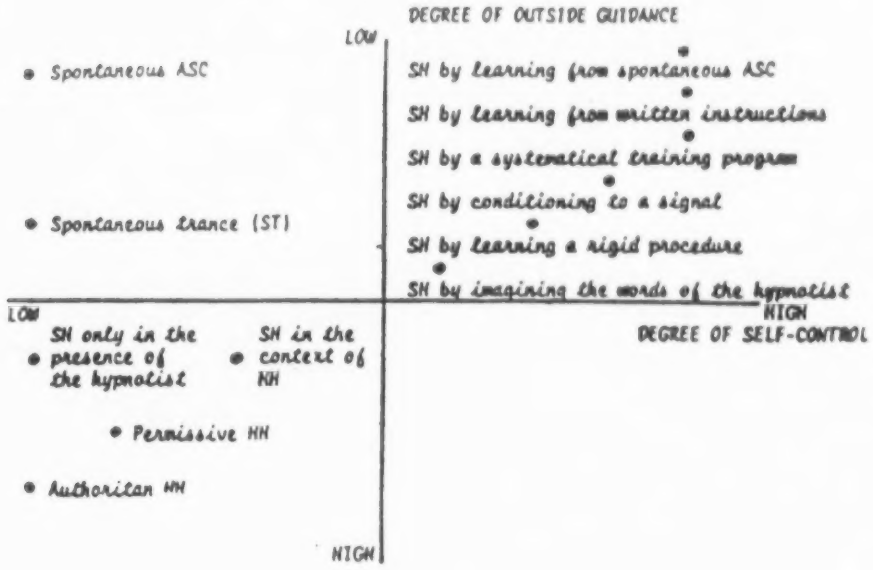

DEGREE OF OUTSIDE GUIDANCE
LOW
HIGH
Spontaneous ASC
Spontaneous trance (ST)
SH only in the presence of the hypnotist
SH in the context of HH
Permissive HH
Authoritan HH
SH by learning from spontaneous ASC
SH by learning from written instructions
SH by a systematical training program
SH by conditioning to a signal
SH by learning a rigid procedure
SH by imagining the words of the hypnotist
LOW
HIGH
DEGREE OF SELF-CONTROL

FIGURE 5. EFFECTS OF A 5-DAYS MENTAL TRAINING ON CONCENTRATION
(US National Rhytmic Gymnastic Team; Schmid, Unestâhl, 1973)

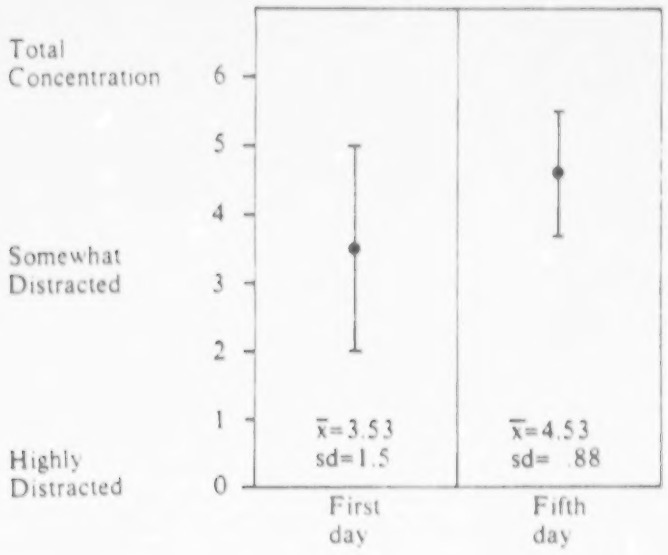


FIGURE 6. EFFECTS ON BOWLING SKILLS UNDER AND AFTER 3-MONTHS OF MENTAL TRAINING. (Breife, Unestâhl, 1982)

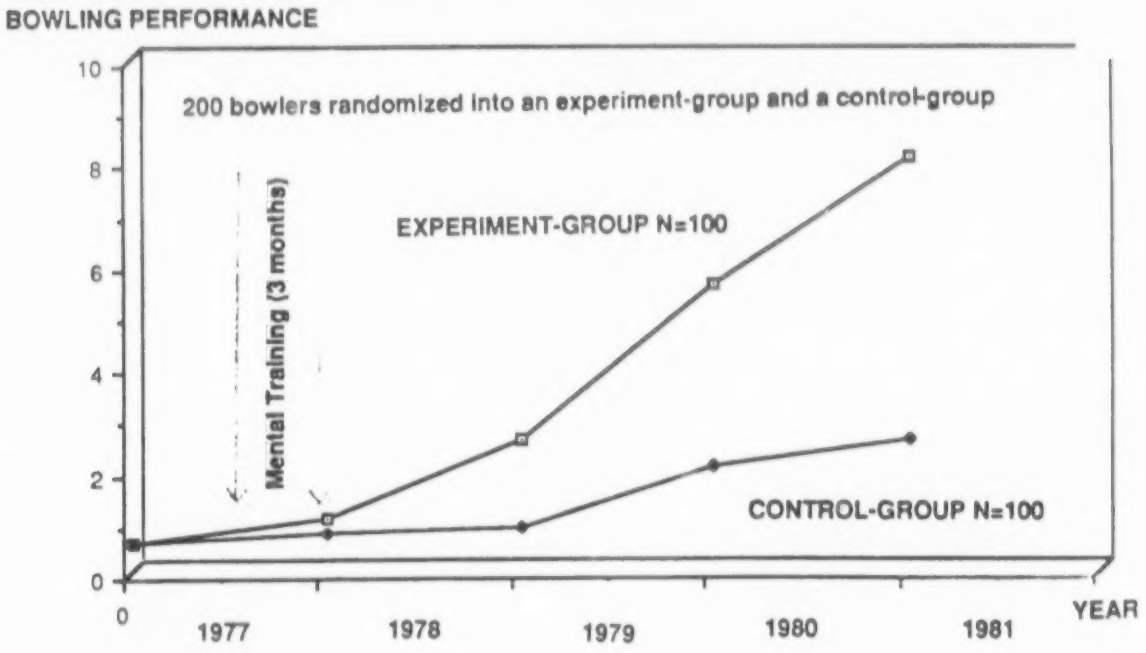
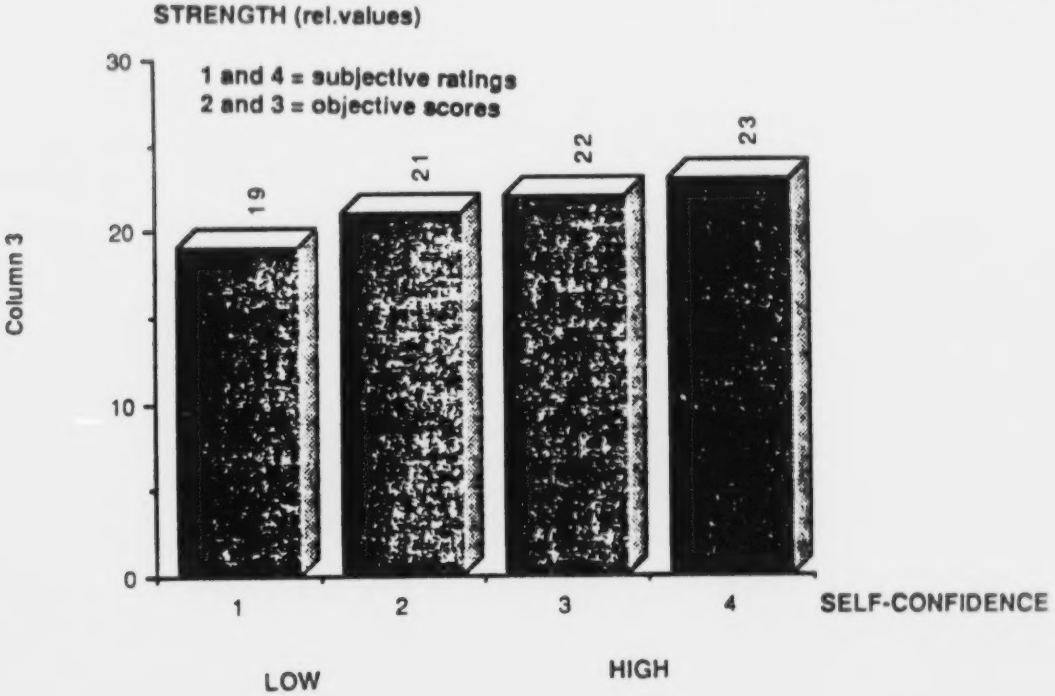


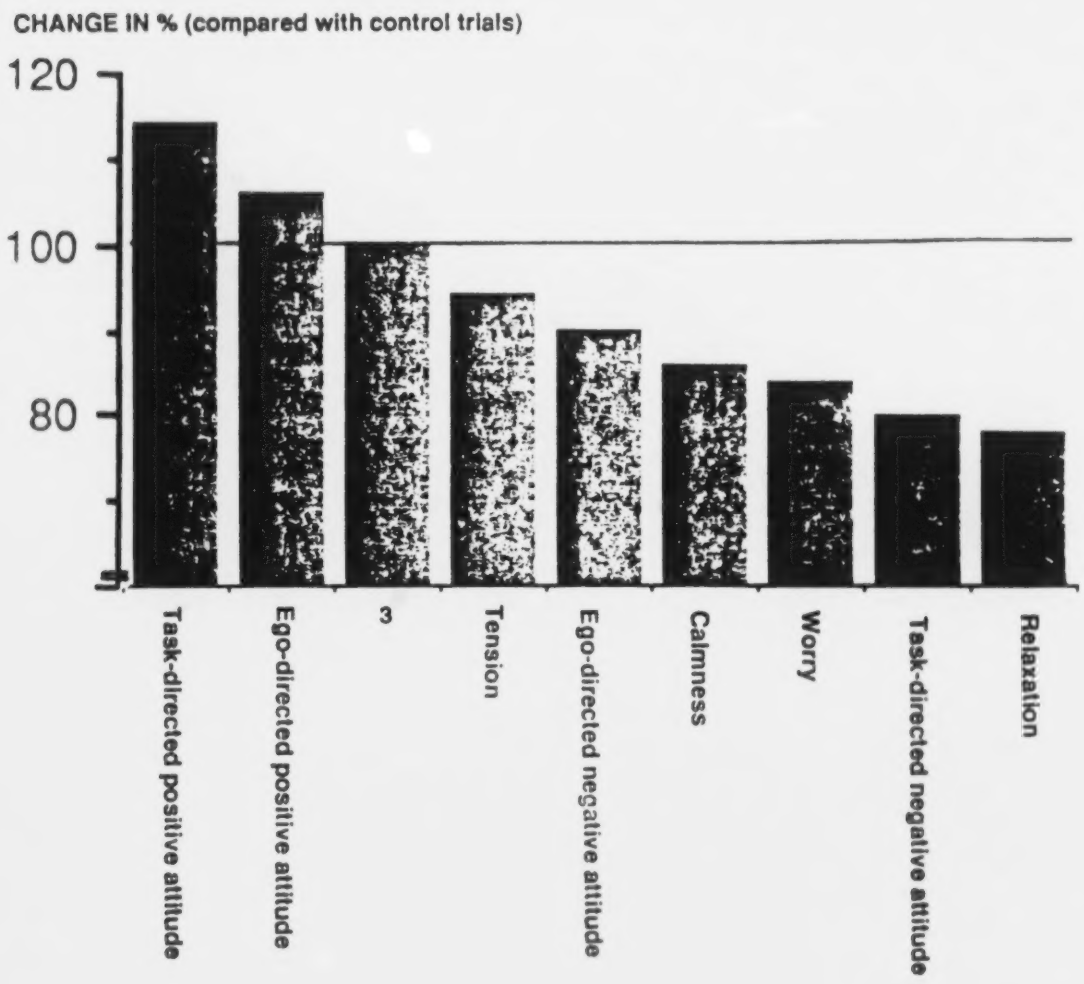
Figure 7

Maximal strength measured by hand dynamometer after posthypnotically induced high and low self-confidence. Objective scores and subjective ratings. N = 8. Means over Ss and trials.



A typical study where subjective ratings exceed the effects on performance

FIGURE 8. MAXIMUM ISOMETRIC STRENGTH DURING POSTHYPNOTIC INDUCED STATES (Uneståhl, 1983)



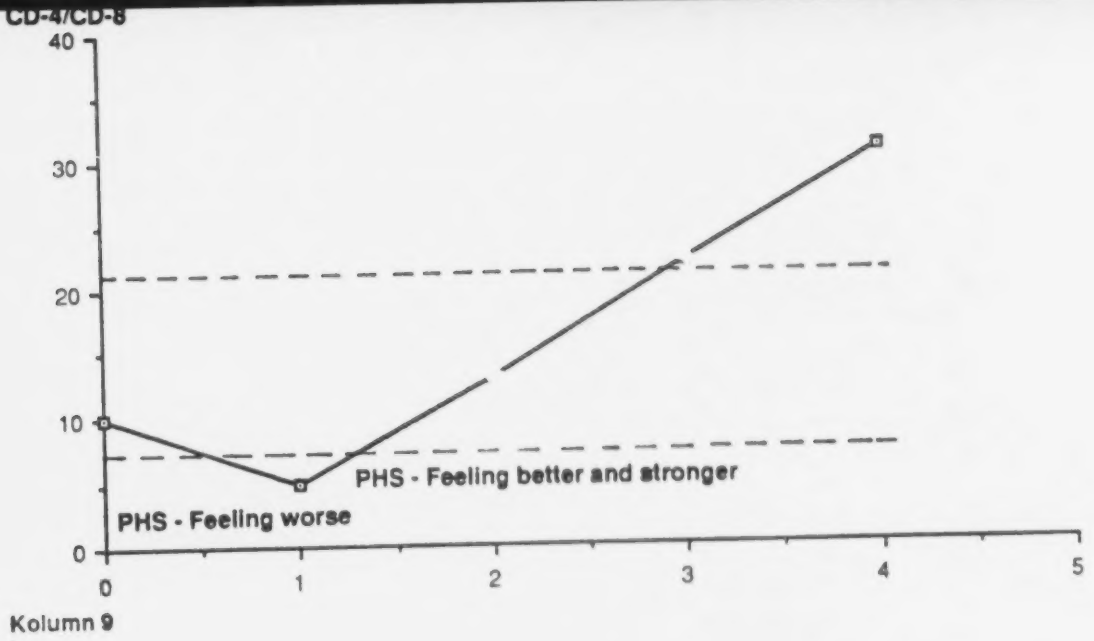


FIGURE 10. THE EFFECTS OF SYSTEMATIC AND LONG-TERM "HUMOR TREATMENT" IN CRONIC PAIN PATIENTS (Ljungdahl, Uneståhl, 1988

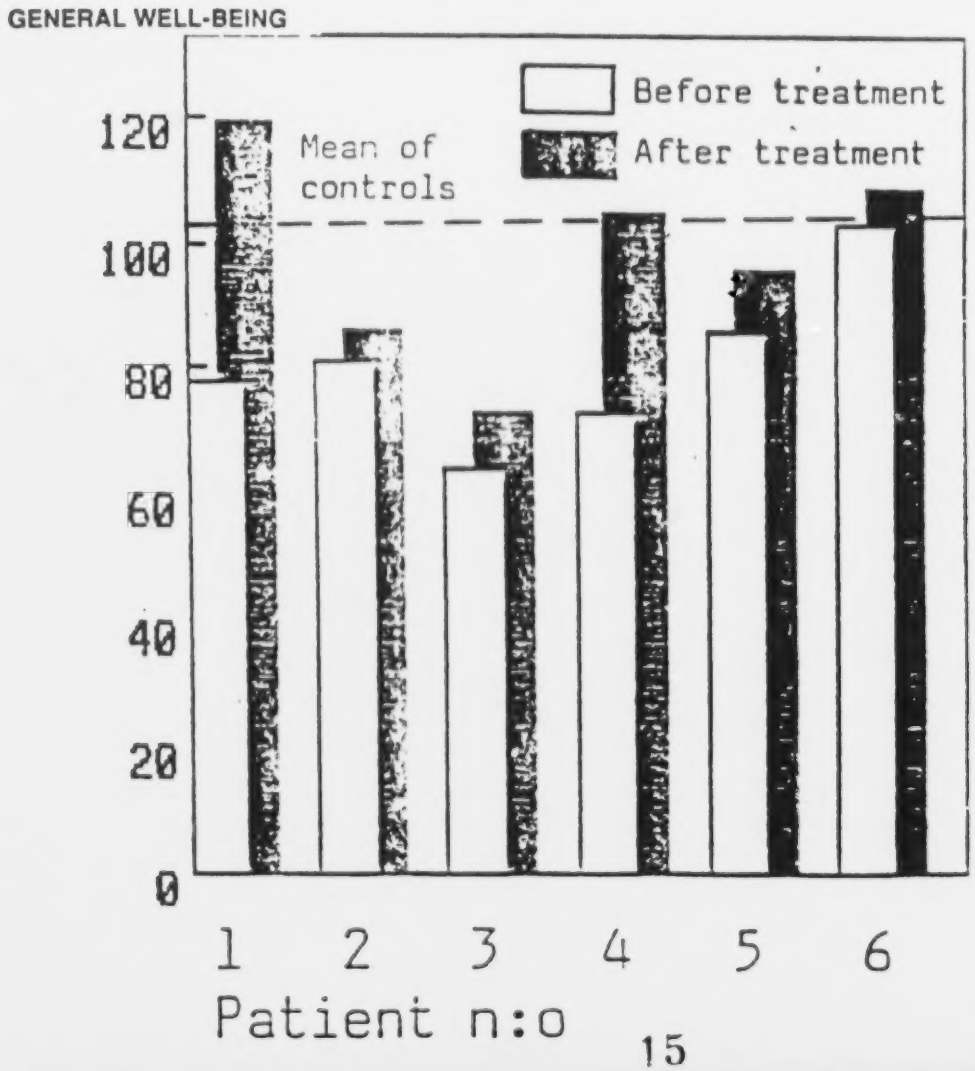


FIGURE 11A. EFFECTS OF LONG-TERM TRAINING OF MENTAL SKILLS

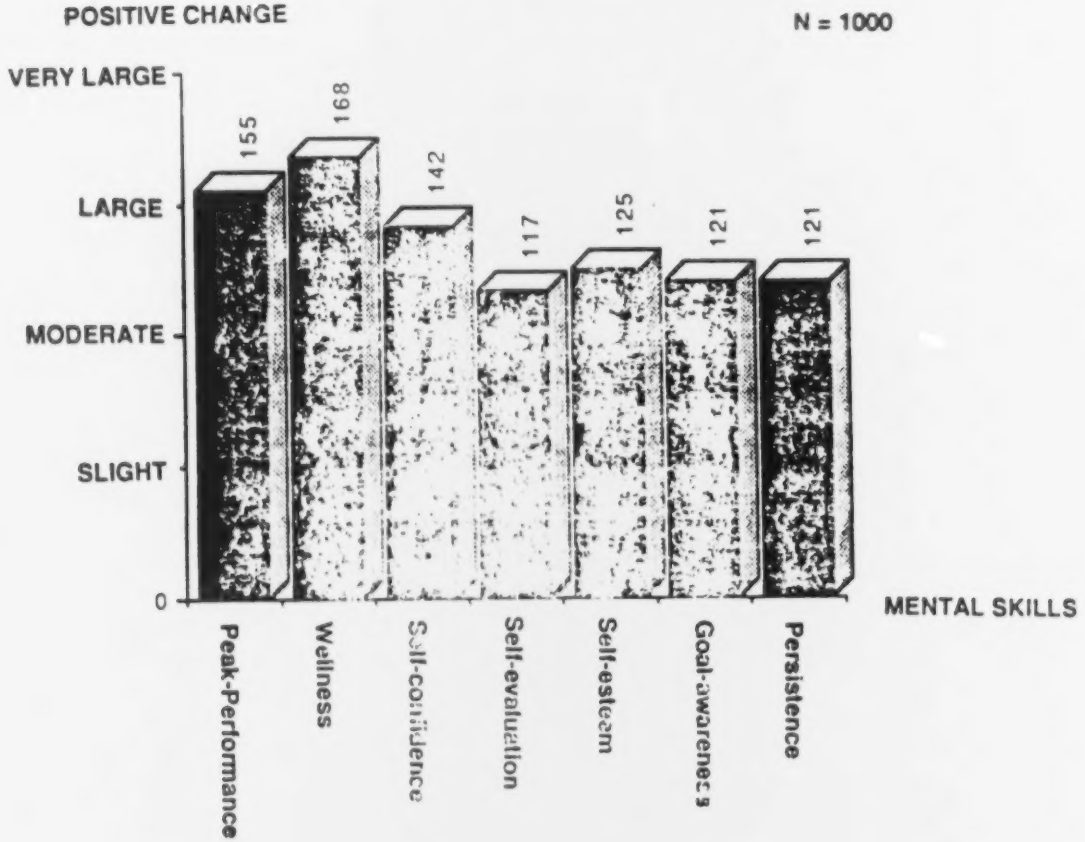
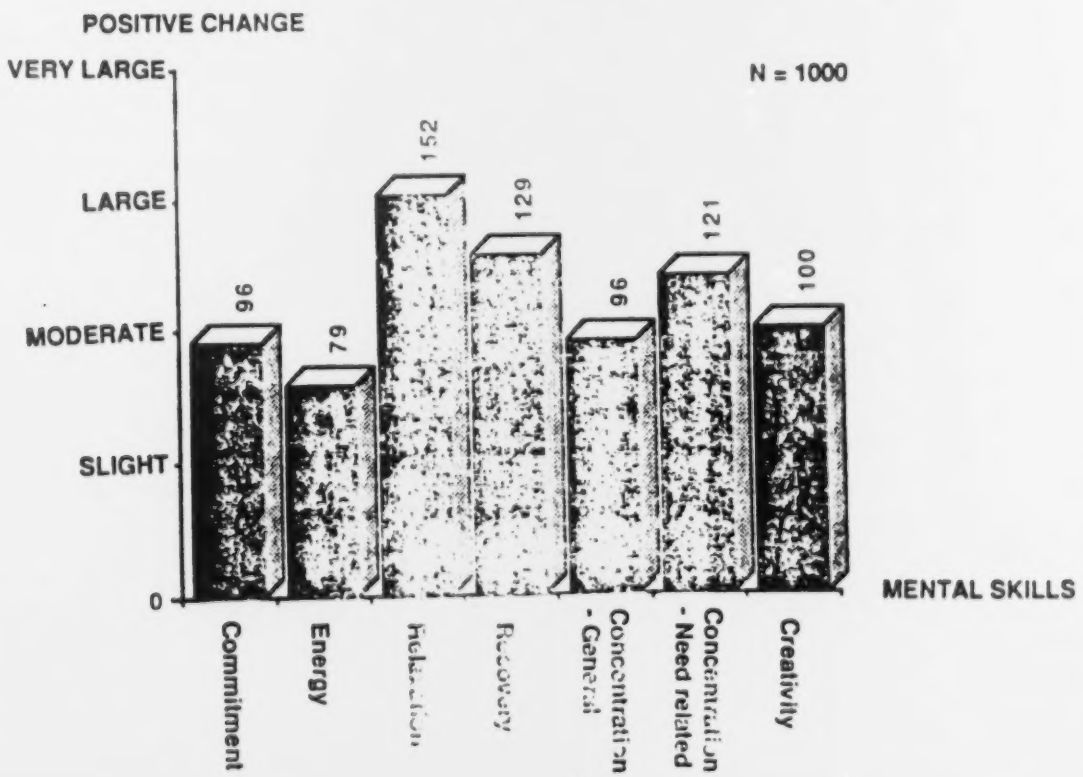


FIGURE 11B. EFFECTS OF LONG-TERM TRAINING OF MENTAL SKILLS



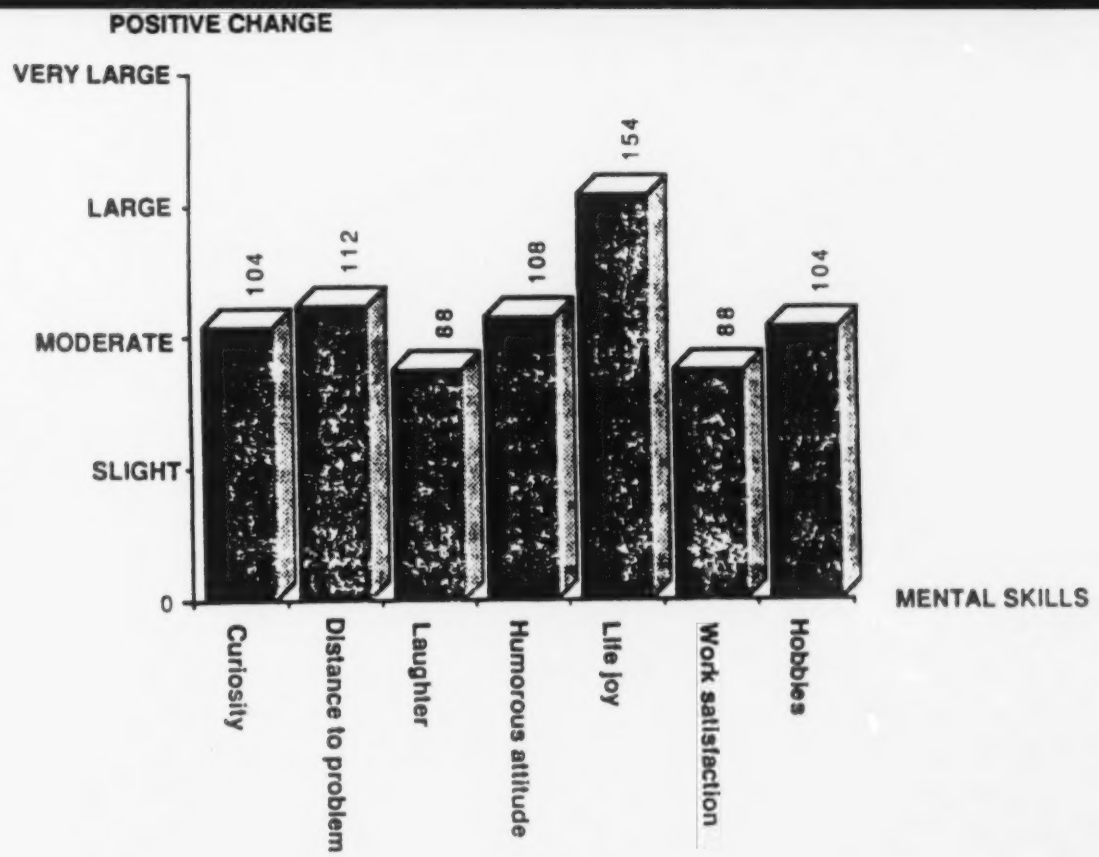


FIGURE 11D. EFFECTS OF LONG-TERM TRAINING OF MENTAL SKILLS